

DECEMBER 1994

Orienting to situational awareness (Aeromedical Training Centre, Indian Air Force, Air Force Station Hindan, Ghaziabad, India): "Spatial disorientation (SD) is a term which continues to have different meanings for different classes of people involved with aviation. The advent of new terms like 'situational awareness' (SA), has only added to the plethora of existing definitions, leading to a difference of opinion among researchers worldwide. Lack of agreement regarding the semantics of SD among various aircraft accident investigators leads to different yardsticks in determining whether or not an accident is SD-related. These definitional differences do not allow for inter-Air Force comparisons of SD accident data, and a valuable opportunity to learn from the experience of others is lost. The authors examine the existing definitions, and propose a new practical operational definition of SD, for use in investigation and classification of aircraft accidents..."

"SD can then be defined as 'the failure of a pilot to correctly sense the attitude or motion of the aircraft or of him or herself, resulting from inadequate or erroneous sensory information (from the receptors)'..."

"[Loss of] SA would then be defined as 'a condition wherein the aircraft enters a dangerous, or potentially dangerous flight path, as a result of central error' (either an illusion, or due to error of judgment, preoccupation, etc)."¹

DECEMBER 1969

Radiation exposure in space (special report by NASA, USN, USAF): "None of the Gemini or Apollo [radiation] dose measurements were high enough to be considered hazardous. There is a trend toward larger doses as missions are flown higher and longer. Extended orbital operations between 1400 and 4400 kilometers in a spacecraft as well shielded as the Command Module would encounter high interior radiation levels.

"Pronounced spacecraft geometry effects have been measured in manned spacecraft. These effects may be useful in large space stations and long space voyage operations where, during periods of high radiation intensity, the crews may seek shelter in the protected areas and thus eliminate the requirement for bulk shielding and weight.

"Radiation dose is already a criterion used in mission planning. The actual shape of the orbit, i.e., the location and number of revolutions at high altitude are the limiting criteria for some missions. Instrumentation for radiation measurements aboard United States manned flight has been tailored to suit individual mission environments as determined by the mission objectives."³

Pilots...watch your tone of voice! (Naval Aerospace Medical Institute, Pensacola, FL; Bolt Beranek and Newman, Inc., Cambridge, MA): "Possible indicators of a pilot's emotional state which have thus far received little research attention are his vocal utterances during air-to-ground radio communications. An exploratory study has been conducted wherein excerpts of tape-recorded conversations between pilots and control tower operators transmitted during known emotionally stressful situations were subjected to spectrographic analysis. Quantitative and qualitative analyses of narrow-band spectrograms of selected utterances indicate that measurements of fundamental frequency

and range of fundamental frequency, together with observation of the fundamental frequency contour, may serve to signify when a pilot is undergoing emotional stress."⁴

DECEMBER 1944

Public perceptions of aircraft as disease vectors (Air Surgeon, Army Air Forces, Washington, DC): "The public tendency to take an alarmist view of the airplane as an international carrier of disease was scouted by Major General David N. W. Grant, The Air Surgeon of the Army Air Forces, in an address on October 6, 1944, at the Annual Scientific Assembly of the Medical Society of the District of Columbia in Washington, D.C.

"The expectation that wartime development of aviation will lead to an age of global air traffic has a reasonable basis in the fact that, in a military sense, we have already achieved maturity in this respect,' said General Grant. 'A by-product of this development has been the public prediction, at times rather unconsidered, that the airplane would greatly intensify the hazard of the international transmission of communicable diseases and their insect and animal vectors..."

"At the request of the Surgeon General, a Flight Surgeon was delegated to represent the Army in the Interdepartmental Quarantine Commission set up in May, 1943, by the Secretaries of War and Navy and the Administrator of the Federal Security Agency... This commission was charged with the study of the problems of foreign quarantine in air, sea, and terrestrial travel... Medical officers of the Navy and the United States Public Health Service completed the three-man commission..."

"In the recent tendency of some health authorities to view the airplane with alarm as a carrier of international disease, one significant point has commonly been overlooked... This is the fact that all known implantations of insects to date have been effected by surface vessels, trains, and automobiles... The Commission found no known instance of a foreign vector of disease having been established in another country as a result of air transportation in spite of the tremendous increase of international traffic of military aircraft..."

"Furthermore, the Commission was able to find only one instance where quarantinable disease was known to have been transported by international air traffic. This was the case of smallpox flown to the United States from South America last spring."²

REFERENCES

1. Navathe PD, Singh B. An operational definition for spatial disorientation. *Aviat Space Environ Med.* 1994; 65(12):1153-1155.
2. Notes from the Air Surgeon's Office. *J Aviat Med.* 1944; 15(6):405-407.
3. Richmond R. A review of Gemini and Apollo astronaut dosimetry data. *Aerosp Med.* 1969; 40(12):1517-1527.
4. Williams CE, Stevens KN. On determining the emotional state of pilots during flight: an exploratory study. *Aerosp Med.* 1969; 40(12):1369-1372.

This column is prepared each month by Walter Dalitsch III, M.D., M.P.H. Most of the articles mentioned here were printed over the years in the official journal of the Aerospace Medical Association. These and other articles are available for download from Mira LibrarySmart via <https://submissions.mirasmart.com/asmaarchive/Login.aspx>.

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DOI: <https://doi.org/10.3357/AMHP.5437.2019>